ABSTRACT

A method for the synthesis of method for the manufacture of carbide cermet powders, comprises high energy ball milling a mixture of precursor powders and a carbon source, followed by annealing the milled powder mixture. The precursor powders are selected from materials suitable for the formation of cermets, for example silicon, titanium, thorium, hafnium, vanadium, chromium, tungsten, tantalum, niobium, and zirconium-containing materials. The precursors further include a source of carbon. Tungsten cobalt carbide powders produced by this method are submicron-sized (0.2 to 0.4 microns) with internal nanograins (10 to 40 nanometers in diameter).